introducing at least one oxidizable chemical comprising a cyclic ring consisting of carbon, oxygen, and hydrogen into the processing chamber;

reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the cyclic ring in a conformal layer; and

converting the cyclic ring to dispersed voids.

24. (New) The method of claim 23, wherein the oxidizable chemical is selected from the group consisting of vinyl-1,4-dioxinyl ether, vinyl furyl ether, vinyl-1,4-dioxin, vinyl furan, methyl furoate, furyl formate, furyl acetate, furaldehyde, difuryl ketone, difuryl ether, difurfuryl ether, furan, and 1,4-dioxin.

25. (New) The method of claim 23, wherein the oxidizable chemical is difurfuryl ether.

REMARKS

This is intended as a full and complete response to the Final Office Action dated February 26, 2003, having a shortened statutory period for response set to expire on May 26, 2003. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-18 are pending in the application and stand rejected.

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Grill*, U.S. Patent No. 6,312,793, and *Tsukune, et al.*, U.S. Patent No. 5,314,724. *Grill* does not describe an oxidizable chemical comprising a member selected from the group consisting of tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl. The Examiner asserts that it would have been obvious to use *Tsukune, et al.'s* oxidizable chemical including tertiarybutoxy in Grill's process to provide process chemicals for the formation of a planarized insulation film having a desired thickness and high reliability.

Applicants submit that there is no motivation to combine *Grill* and *Tsukune, et al.* *Grill* describes a process for depositing a low dielectric constant film that includes a first phase of SiCOH and a second phase of C, H, and pores. *Tsukune, et al.* describes a

process for depositing a silicon oxide film, *i.e.*, a non-low k film. Applicants submit that there is no motivation to use the precursors of *Tsukune, et al.* in the process of Grill, as the film formed in Grill is substantially different that the film formed in *Tsukune, et al.*.

Furthermore, Applicants submit that *Tsukune, et al.* does not describe a film having dispersed voids or converting a member selected from the group consisting of tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl into dispersed voids. *Grill* does not describe an oxidizable chemical having a member selected from the group consisting of tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl or converting a member selected from the group consisting of tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl to dispersed voids. Thus, Applicants submit that *Grill* and *Tsukune, et al.* do not teach, show, or suggest a method for depositing a low dielectric constant film, comprising introducing a siloxane comprising two or more silicons and four or more methyl groups bonded to the silicons into a processing chamber, introducing at least one oxidizable chemical comprising a member selected from the group consisting of tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl into the processing chamber, reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the member in a conformal layer, and annealing the conformal layer at a temperature sufficient to convert the member to dispersed voids, as recited in claim 1. Applicants respectfully request withdrawal of the rejection of claim 1 and of claims 16 and 18, which depend thereon.

Applicants further submit that *Grill* and *Tsukune, et al.* do not teach, show, or suggest a method for depositing a low dielectric constant film, comprising introducing a siloxane comprising two or more silicons and four or more methyl groups bonded to the silicons into a processing chamber, introducing at least one oxidizable chemical comprising two or more members selected from the group consisting of tertiarybutyl, tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl into the processing chamber, reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the two or more members in a conformal layer, and annealing the conformal layer at a temperature sufficient to convert the two or more members to dispersed voids, as recited in claim 2. Applicants respectfully request withdrawal of the rejection of claim 2 and of claims 3-4, 10-15, and 17, which depend thereon.

Applicants further submit that *Grill* and *Tsukune, et al.* do not teach, show, or suggest a method for depositing a low dielectric constant film, comprising introducing a siloxane comprising two or more silicons and four or more methyl groups bonded to the silicons into a processing chamber, introducing at least one oxidizable chemical comprising a member selected from the group consisting of tertiarybutyl, tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl into the processing chamber, wherein the at least one oxidizable chemical comprises silicon, reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the member in a conformal layer, and annealing the conformal layer at a temperature sufficient to convert the member to dispersed voids, as recited in claim 5 Applicants respectfully request withdrawal of the rejection of claim 5 and of claims 6-9, which depend thereon.

Applicants have proposed new claims 21-25 to claim additional aspects of the invention. Applicants submit that the changes made herein do not introduce new matter. Claims 21, 22, and 25 specify that the oxidizable chemical is difurfuryl ether and are within the scope of claims 1, 2, and 23, respectively. Claims 23-25 claim another aspect of the invention. The oxidizable chemicals in new claims 21-25 are supported by the parent specification, U.S. patent application Serial No. 09/484,689. Applicants submit that claims 21 and 22 are patentable over *Grill* and *Tsukune, et al.*, as well as the references of record, for the reasons discussed above with respect to claims 1 and 2.

Applicants further submit that *Grill* and *Tsukune, et al.* do not teach, show, or suggest a method for depositing a low dielectric constant film, comprising introducing a siloxane comprising two or more silicons and four or more methyl groups bonded to the silicons into a processing chamber, introducing at least one oxidizable chemical comprising a cyclic ring consisting of carbon, oxygen, and hydrogen into the processing chamber, reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the cyclic ring in a conformal layer, and converting the cyclic ring to dispersed voids, as recited in claim 23. Applicants submit that *Grill* does not disclose a method that includes converting a cyclic ring consisting of carbon, oxygen, and hydrogen to a dispersed void. *Grill* describes a multi-phase film that has a first phase of SiCOH and a second porous phase of carbon and hydrogen.

Grill describes the second phase as having both carbon and hydrogen and pores. *Grill* does not describe converting material, such as the cyclic ring consisting of carbon, oxygen, and hydrogen, to dispersed voids, as described in the instant application. Substantially converting the cyclic hydrocarbon compounds of *Grill* to dispersed voids would result in the removal of the carbon and hydrogen phase of *Grill*. However, the carbon and hydrogen phase is a required part of the multiphase films of *Grill*. *Grill* also describes an optional third phase of a multi-phase film that includes either 1) open regions created by the presence of guest molecules, such as Ge, N, or F, or 2) another hydrocarbon phase having pores. *Grill* does not describe removing cyclic rings to create the pores. Applicants respectfully request entry and allowance of new claims 21-25.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the method or apparatus of the present invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

The prior art made of record is noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action. Accordingly, allowance of the claims is respectfully requested.

Respectfully submitted,

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